Asbestos and Chest X-rays

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Asbestos

- Asbestos is a naturally occurring mineral used extensively in the past for insulation and fire proofing in buildings constructed before 1970
- Asbestos is present in a number of MSFC buildings where it was used for spray on insulation, floor tiles, pipe insulation and transite siding
- The primary route for human exposure is inhalation

Asbestos Work

- Covered under OSHA (29 CFR 1910.1001 & 1926.1101) and EPA regulations
- Permissible Exposure Limit (PEL) is 0.1 f/cc of air
- Considered asbestos containing if equal to or greater than 1%
- Buildings containing asbestos are monitored on a regular basis by Environmental Health Services

Health Effects

- Asbestos related diseases are asbestosis, pleural disease, lung cancer, and mesothelioma
- About 30 year latency period from exposure to development of disease
- Risk of lung cancer compared to non-smoking, non-asbestos workers:
  - 4x non-smoking asbestos workers
  - 12x non-asbestos worker who smoke
  - 90x asbestos workers who smoke

Monitoring at MSFC

- Buildings containing asbestos are monitored annually, except 4200, 4201, 4202 and 4663 which are monitored quarterly
- **Total** fiber counts are in the 0.002 to 0.008 f/cc range
- Transmission electron microscopy (TEM) analysis is used to identify asbestos fibers. Except during abatement projects these are consistently negative for asbestos

Screening For Lung Cancer

- No organizations currently recommend screening of either the general population or of smokers for lung cancer with either chest X-rays or sputum cytology
- Several large studies by the National Cancer Institute's Early Lung Cancer Detection Program failed to show a decrease in lung cancer deaths between individuals screened and controls

Screening For Lung Cancer (continued)

- Lung cancer must reach a size of 1 cc in order to be detected on routine chest x-rays. By this time micrometastatic dissemination has already occurred
- All Federal Agencies discontinued routine annual chest x-rays in the late ‘70s because of the above findings
- Many physicians disagree and recommend screening of heavy smokers with COPD

Screening For Lung Cancer (continued)

- Low dose CT can pick up suspicious lesions as small as 3 mm
- Some medical schools are studying the effectiveness of comprehensive lung cancer screening
- The use of routine chest x-rays for lung cancer screening continues to be debated